

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,186	04/27/2001	Jacek Tadeusz Gabzdyl	M00B107	2157

7590

05/17/2002

The BOC Group, Inc.  
Intellectual Property Department  
100 Mountain Avenue  
New Providence, NJ 07974

EXAMINER

PITTMAN, ZIDIA T

ART UNIT	PAPER NUMBER
----------	--------------

1725

DATE MAILED: 05/17/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

T.D-6

# Office Action Summary

Application No.

09/844,186

Applicant(s)

GABZDYL, JACEK TADEUSZ

Examiner

Zidia Pittman

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: On page 2 line 18, "The ***should*** now begins.." should be "The ***shoulder*** now begins..".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 2, and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Waldron et al (USPN 6,168,067).

Waldron et al teaches high strength friction stir welding. The structural members are joined to one another by friction stir welding along the interface of the members, which defines a welding path between the members. A rotating friction stir welding tool is forced through the outer surfaces of the structural members. The frictional heat generated by the rotating probe creates a plasticized region or weld zone between the structural members. The rotating probe is then moved along the path defined by the interface between the structural members to thereby form a continuous friction stir weld

Art Unit: 1725

joint along the length of the members, thus forming a unitary-structural assembly. The size of the heat-affected region may be reduced by applying a continuous stream of cooling fluid through one or more coolant jets. Preferably, the cooling fluid is applied to the weld zone immediately behind the friction stir welding probe. In another embodiment, the stream of cooling fluid may be applied in multiple locations to the area of the structural members. The cooling fluid may include any non-reactive liquid coolant or chilled gas. In a preferred embodiment, the cooling fluid includes chilled nitrogen gas. The work piece may be an aluminum alloy. (column 3 line 50 – column 4 line 5; column 4 line 49 – column 5 line 54)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al in view of Soviet Union Patent (SU-414066).

Waldron et al teaches all of the limitations of claims 3 and 4 except for teaching a method in which the liquid cryogen is liquid nitrogen or liquid argon.

Soviet Union Patent teaches argon-arc welding. Resistance of argon arc welds against thermal crack formation is ensured by using liquid argon or nitrogen for forced cooling of the weld with cooling streams directed against the movement of the welding head. (abstract)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Waldron et al with the teachings of the Soviet Union Patent in order to protect the friction stir weld against thermal crack formation. Argon-arc welding and friction stir welding are types of thermal welding.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al in view of United Kingdom Patent (1 552 660).

Waldron et al teaches all of the limitations of claims 3 and 5 except for teaching a method in which the cryogen is liquid nitrogen or solid carbon dioxide.

United Kingdom Patent teaches a method of arc welding. The toughness of both the weld metal and the heat affected zone will become more pronounced by using higher cooling rates for the forced cooling through the ranges from the maximum temperature to 800° and from 800° to 500°. Specific cooling rates are used to obtain high toughness for the welding metal and the heat affected zone. As cooling agent, water, liquid nitrogen or dry ice (solid carbon dioxide) may be employed within the scope of the present invention. (page 2 lines 13-28)

Art Unit: 1725

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Waldron et al with the teachings of the United Kingdom Patent in order to obtain high toughness for the welding metal and the heat affected zone. Arc welding and friction stir welding are types of thermal welding.

Claims 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al in view of Terai et al (USPN 3,836,748).

Waldron et al teaches all of the limitations of claims 3 and 4 except for teaching a method in which the cryogen is liquid nitrogen, solid carbon dioxide or a mixture of solid carbon dioxide and a liquid cryogen.

Terai et al teaches a process of welding a high tension steel by metal arc inert gas welding. The sub-zero treatment is conducted by contacting the weld metal with any suitable coolant. The particular coolant used is not critical, and examples are dry ice, mixtures of dry ice with methyl or ethyl alcohol, and liquid nitrogen. (column 1 lines 31-35; column 3 lines 5-15)

At the time of the invention, it would have been obvious to one having ordinary skill in the art to modify the teachings of Waldron et al with the teachings of Terai et al in order to provide a process of welding without softening or crack formation at the heat-affected portion of the welded metal. Metal arc inert gas welding and friction stir welding are types of thermal welding.

Art Unit: 1725

**Conclusion**

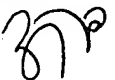
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Thomas et al (USPN 5,460,317) and Midling et al (USPN 5,813,592) are cited as of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zidia Pittman whose telephone number is (703) 305-1248. The examiner can normally be reached on Monday – Thursday and alternate Fridays from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn, can be reached at (703) 308-3318. The official fax phone number for the organization where this application or proceeding is assigned is (703) 305-7718. The unofficial fax number for art unit 1725 is (703) 305-6078.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
05/13/02

  
M. ALEXANDRA ELVE  
PRIMARY EXAMINER